

Translation of Japanese Patent Application No. 2002-325759

[Type of Document(s)]	Application for patent
[Reference Number]	225195
[Filing Date]	November 8, 2002
[Addressee]	Director-General of the Patent Office, Esq.
[International Patent Classification]	G06F 3/00
[Title of Invention]	INFORMATION PROCESSING METHOD
[Number of Claim(s)]	1
[Inventor(s)]	
[Address/Domicile]	c/o CANON KABUSHIKI KAISHA 3-30-2, Shimomaruko, Ohta-ku, Tokyo, Japan
[Name]	Yoshihiro Takagi
[Applicant for Patent]	
[Identification Number]	000001007
[Name]	CANON KABUSHIKI KAISHA
[Agent]	
[Identification Number]	100076428
[Patent Attorney]	
[Name]	Yasunori Ohtsuka
[Telephone Number]	03-5276-3241
[Selected Agent]	
[Identification Number]	100112508
[Patent Attorney]	
[Name]	Jiro Takayanagi
[Telephone Number]	03-5276-3241
[Selected Agent]	
[Identification Number]	100115071
[Patent Attorney]	
[Name]	Yasuhiro Ohtsuka
[Telephone Number]	03-5276-3241
[Selected Agent]	
[Identification Number]	100116894
[Patent Attorney]	

[Name]	Shuji Kimura	
[Telephone Number]	03-5276-3241	
[Detail of Fee(s)]		
[Register Number of Prepayment]	003458	
[Amount of Payment]	21000	
[List of Attached Documents]		
[Classification]	Specification	1
[Classification]	Drawing(s)	1
[Classification]	Abstract	1
[Number of General Power of Attorney]	0102485	
[Proof Required? Y/N]	Yes	

[Type of the Document] Specification

[Title of the Invention] INFORMATION PROCESSING METHOD

[What Is Claimed Is:]

[Claim 1] An information processing method of  
5 distributing across a network a control program for  
controlling a network device, characterized by  
comprising:

a designation step of designating a geographical  
range for searching for a network device connected to  
10 the network;

a search step of searching for the network  
device; and

a distribution step of collectively distributing  
a control program to a client which manages the network  
15 device searched for within the designated geographical  
range.

[Detailed Description of the Invention]

[0001]

[Technical Field to Which the Invention  
20 Belongs]

The present invention relates to a technique for  
collectively providing the latest version of a printer  
driver for client computers on a network and updating  
the driver.

25 [0002]

[Prior Art]

One conventional printer driver installation

method is to input predetermined items in an interactive manner in accordance with the OS of each client computer for controlling a printer. When "Windows (registered trademark)" of Microsoft is used  
5 by this method, for example, a user selects "add printer" from "properties" of a printer and inputs necessary information by an interactive program called wizard, thereby installing a printer driver.

[0003]

10 Another method installs a printer driver by user's operation using an installer in the same manner as addition of an application. Also, when printing is to be performed by controlling a specific client apparatus (Point & Print), a printer driver can be  
15 installed in the client apparatus from a print server by distribution by using, e.g., Windows (registered trademark) NT/2000.

[0004]

In the conventional techniques as described  
20 above, the printer driver installation operation must be performed for each individual client apparatus. If, for example, printing is to be executed by printers by controlling various client apparatuses across a network in a company having a large number of computers,  
25 printer drivers must be installed in all the client apparatuses. The total number of manual steps of the operation cannot be ignored. Furthermore, to normally

install a printer driver in each client apparatus, a certain procedure must be reliably followed. Therefore, the operator must have knowledge and capability to some extent or more.

5 [0005]

This requires preparations relevant to installation, e.g., it is necessary to form a detailed manual for executing installation, and educate all the clients. In addition, if installation cannot be  
10 normally performed, a network manager must install a printer driver in each of all the client apparatuses. This enormous work interferes with the company activities requiring rapid and efficient operations.  
[0006]

15 Also, in the Point & Print method using a printer server, printer drivers can be installed in all client apparatuses to which automatic printer driver distribution is designated. However, since the printer drivers are installed in all the client apparatuses by  
20 automatic distribution, a network manager may become unable to manage the use of a printer.

[0007]

As a method of solving these problems, a method called "push type printer driver installation" is  
25 known. In this method, if client apparatuses require installation or update of printer drivers, this installation or update is not performed on the client

apparatuses. Instead, the method allows a network manager on the server side to install or update the printer drivers in all the client apparatuses. In this push type printer driver installation, even if a client  
5 apparatus is performing a certain operation or printing data, a printer driver can be installed or updated without any interference with these operations. An operator on the client side need not have any knowledge concerning installation, and the network manager need  
10 not go to each client apparatus to install the printer driver. That is, the installation operation can be executed by a few operation steps.

[0008]

An example of the above prior art is disclosed in  
15 patent reference 1.

[0009]

[Patent Reference 1]

Japanese Patent Laid-Open No. 2002-251347

[0010]

20 [Problems That the Invention Is to Solve]

The push type printer driver installation method is advantageous in that client apparatuses can be managed collectively. However, even when this method is used, a network manager must explicitly select  
25 client apparatuses in which printer drivers are to be installed. If the number of client apparatuses as objects of installation is large, selecting of these

client apparatuses requires a considerable time.

[0011]

The present invention has been proposed to solve the conventional problems, and has as its object to  
5 provide a technique by which a network manager does not individually select client apparatuses as objects of printer driver installation, but limits a geographical range where printers exist, and collectively installs or updates printer drivers in client apparatuses which  
10 manage printers applied to this limited range. As a consequence, the network manager need not individually recognize the clients, so the operation can be performed by a minimum number of steps.

[0012]

15 [Means of Solving the Problems]

To achieve the above object, according to the present invention, an information processing method by which a control program for controlling a network device is distributed across a network is characterized  
20 by comprising:

a designation step of designating a geographical range for searching for a network device connected to the network;

a search step of searching for the network  
25 device; and

a distribution step of collectively distributing a control program to a client which manages the network

device searched for within the designated geographical range.

[0013]

[Embodiment]

5           An embodiment to which the present invention is preferably applied will be described below. Fig. 1 is a block diagram for explaining the arrangement of a system according to the embodiment of the present invention. User PCs 300 and 310 as client apparatuses  
10   for controlling printing of printers are connected to a network (Internet) 200, and can exchange various data with an information processing apparatus 100 (to be referred to as an automatic printer driver update server PC (server PC) hereinafter) of a printer maker.  
15   Also, the user PCs 300 and 310 are connected to printers 150 and 160, respectively, and can control the printers 150 and 160 on the basis of information distributed from the server PC 100. A file server 210 is connected to the network 200 and manages access to  
20   data stored in a network disk 220.

[0014]

Fig. 2 is a view for explaining an outline of the internal arrangements of a user PC and printer by taking the connection of the user PC 300 and printer  
25   150 as an example. Referring to Fig. 2, the user PC 300 includes a CPU 1 for processing a document containing, e.g., graphics, images, characters, and



tables (including spreadsheets and the like) on the basis of a processing program or the like stored in a program ROM of a ROM 3 or an external memory 11. The CPU 1 comprehensively controls devices connected to a system bus 4. The program ROM of the ROM 3 or the external memory 11 also stores, e.g., an operating system program (to be referred to as an OS hereinafter) which is a control program of the CPU 1. A font ROM of the ROM 3 or the external memory 11 stores, e.g., font data used in the document processing described above. A data ROM of the ROM 3 or the external memory 11 stores various data used when the above-mentioned processing and the like are performed. A RAM 2 functions as, e.g., a main memory and work area of the CPU 1.

[0015]

A keyboard I/F 5 controls key inputs from a keyboard 9 and a pointing device (not shown). A display I/F 6 controls the display contents of a display 10. Although not shown, the user PC 300 also includes a scanner I/F for controlling a scanner, a digital camera I/F for controlling a digital camera, a facsimile I/F for controlling a facsimile apparatus, a mouse I/F for controlling a mouse, a speaker I/F for controlling a loudspeaker, a sound source device I/F for controlling a sound source device, and a telephone I/F for controlling a communication device such as a

telephone.

[0016]

An external memory I/F 7 controls access to the external memory 11 such as a hard disk (HD) or floppy  
5 (registered trademark) disk (FD) which stores a boot program, various applications, font data, user files, edit files, printer drivers, and the like. A printer I/F 8 connects the user PC 300 and printer 150 via a predetermined bidirectional interface (interface) 21,  
10 and controls communication with the printer 150.

[0017]

Note that the CPU 1 makes WYSIWYG on the display  
10 possible by rasterizing an outline font in a display information RAM on the RAM 2. Also, on the basis of  
15 commands designated by a mouse cursor or the like (not shown) on the display 10, the CPU 1 opens various registered windows and executes various data processing. To execute printing, a user opens a window concerning settings of printing, sets a printer, and  
20 sets a printing method, including selection of a printing mode, with respect to a printer driver.

[0018]

In the printer 150, a printer CPU 12 outputs an image signal as output information to a printing unit  
25 (printer engine) 19 via a printing unit I/F 17 connected to a system bus 15, on the basis of a control program or the like stored in a program ROM of a ROM 14

or a control program or the like stored in an external memory 21. The program ROM of the ROM 14 stores, e.g., the control program of the CPU 12. A font ROM of the ROM 14 stores, e.g., font data used to generate the output information. A data ROM of the ROM 14 stores, e.g., information used on the user PC if this printer does not have the external memory 21 such as a hard disk.

[0019]

10           The CPU 12 can communicate with the user PC 300 via an input unit 16, and can notify the user PC 300 of internal information of the printer and the like. A RAM 13 functions as, e.g., a main memory and work area of the CPU 12. The memory capacity of the RAM 13 can be expanded by an optional RAM connected to an expansion port (not shown). The RAM 13 is used as, e.g., an output information rasterizing area, environmental data storage area, and NVRAM. An external memory I/F 18 controls access to the external memory 21 such as a hard disk (HD) or IC card. The external memory 21 is connected as an optional device and stores font data, an emulation program, form data, and the like. An operation panel 20 has switches, LED display devices, and the like for operations.

25   [0020]

          The number of external memories is not limited to one but at least one. That is, it is also possible to

connect an optional font card in addition to the built-in font, and connect a plurality of external memories storing programs for interpreting printer control languages of different language systems.

- 5 Furthermore, an NVRAM (not shown) may also be used to store printer mode setting information from the operation panel 20.

[0021]

Fig. 3 is a view for explaining the arrangement of the server PC 100 shown in Fig. 1. The server PC 100 includes a CPU 301 for executing a network device search program (to be referred to as a "network management program" hereinafter) stored in a ROM 302 or hard disk (HD) 311. The CPU 301 comprehensively controls devices connected to a system bus 304. A RAM 303 functions as, e.g., a main memory and work area of the CPU 301. A keyboard controller (KBC) 305 controls input designations from a keyboard (KB) 309, pointing device (not shown), and the like. A user can set the attribute (e.g., a laser beam printer or bubble jet (registered trademark) printer) of a device to be searched for on the network, and the range of search on the network, via an input means such as the keyboard (KB) 309. A CRT controller (CRTC) 306 controls the display contents of a CRT display (CRT) 310. For example, if network devices of interest are found within the set range, a network device list as the

search result is displayed on the CRT. A disk controller (DKC) 307 controls access to a hard disk (HD) which stores a boot program, application programs, a network management program, and the like. A network interface card (NIC) 308 bidirectionally exchanges data with an agent or network device via the network 200.

[0022]

Fig. 5 is a view showing the module configuration of the network management software executed by the CPU 301. To execute this software, the CPU 301 uses the RAM 303 as a work area. Referring to Fig. 5, a device list module 501 displays a list of devices connected to the network 200 on the CRT 310. By this displayed list, a user can check the presence/absence of a network device of interest within a designated network range.

[0023]

A search module 502 searches for a device connected to the network. For example, the search module 502 can search for a printer by using a printer MIB (Management Information Base) which can be managed by an SNMP (Simple Network Management Protocol), a printer corresponding to Jini (Java (registered trademark) Information Infrastructure, registered trademark) manufactured by Sun Microsystems, Inc in U.S.A., or a printer corresponding to UPnP (Universal Plug and Play). A list of devices found by the search

module 502 is displayed by the device list module 501.

[0024]

Next, the process of downloading a printer driver from the server PC 100 into a predetermined user PC across the network 200, or updating a printer driver will be described below with reference to a flow chart shown in Fig. 4.

[0025]

<Printer Driver Update Process>

10        Fig. 4 is a flow chart for explaining the printer driver installation or update process according to the embodiment of the present invention. First, in step S401, the manager of the server PC 100 designates a geographical printer range as a search range, in order to search for printers as objects of printer driver update. The unit of the "geographical range" designated to search for printers connected to the network largely depends upon the scale of printer management. For example, it is possible to designate, as units, small sections such as rooms, floors, or buildings of a structure in which printers are installed, and large sections such as municipalities, prefectures, or nations. The server manager need only designate any of these arbitrary units as the range of printers to be updated; he or she need not know details such as the name and address of each printer on the network.

[0026]

Printers are then searched for within the range designated in step S402. As a search method, it is possible to search for a printer by using a printer MIB (Management Information Base) which can be managed by an SNMP (Simple Network Management Protocol), a printer corresponding to Jini (Java (registered trademark) Information Infrastructure), or a printer corresponding to UPnP (Universal Plug and Play). It is of course also possible to search for devices connected to the network by using some other technique. That is, the gist of the present invention is not limited to the aforementioned means, provided that network devices, i.e., user PCs and printers in this embodiment, can be detected in a region designated as a search range on the network.

[0027]

For example, an SNMP network management technique as one printer searching means is as follows. A search module (502 in Fig. 5) containing a network management protocol used to exchange management information executes communication between at least one network management station (NMS: corresponding to the server PC 100 shown in Fig. 1) and a plurality of nodes to be managed (e.g., 300, 310, 150, and 160 shown in Fig. 1) including an agent. A user can acquire information pertaining to the attribute (e.g., a PC, printer, or

facsimile apparatus) of a device on the network, and information for specifying the geographical position of the device, by communicating with agent software on a node to be managed by using the network management  
5 software on the NMS (server PC 100).

[0028]

The "agent" is software running as a background process for each device to be managed connected to the network. This agent holds data concerning its own  
10 state in the form of a database (MIB). Each of the user PCs 300 and 310 and printers 150 and 160 has this agent on a network board for connecting to the network, so these user PCs (300 and 310) and printers (150 and 160) can be managed by the network management software.  
15 The server PC 100 can request the MIB to transmit information to be collected from an object to be managed, and receive the corresponding data from each device.

[0029]

20 Information of a printer or the like need not be acquired by the above-mentioned method. For example, a device attribute information list and device geographical position information list registered in the database of the server PC 100 can also be acquired  
25 in accordance with the range designated in step S401. Also, the server PC 100 need only acquire these information lists registered in a network disk 220



connected to the network, in accordance with the designated range.

[0030]

In step S403, on the basis of the printer search  
5 process in step S402, the server PC 100 acquires  
position information of each printer. As a method of  
acquiring position information, for example, position  
information can be collected from each network device  
by the MIB which can be managed by the SNMP. A  
10 communication protocol between the server PC 100 and a  
network device is not limited to the SNMP. For  
example, position information can also be acquired by  
an IPP (Internet Printing Protocol) or a SOAP (Simple  
Object Access Protocol).

15 [0031]

Each of the printers 150 and 160 includes a means  
for setting position information, and can store the set  
position information in the external memory 21. The  
position information can be set by causing the user to  
20 specify a geographical range (set by using, as units,  
small sections such as rooms, floors, or buildings of a  
structure in which printers are installed, and large  
sections such as municipalities, prefectures, or  
nations) via an operation panel 29.

25 [0032]

To set position information, a position search  
unit 22 using, e.g., a GPS (Global Positioning System)

can be incorporated into the printer to allow the printer itself to detect information of the latitude and longitude. The printer position can be set by comparing the detected information with geographical information (not shown) such as a map indicating buildings, floors, or sections of municipalities. The set position information is transmitted from each printer to the server PC 100 as a response to a request transmitted from the server PC 100.

10 [0033]

A packet exchanged between the server PC 100 and the network devices (including the user PCs 300 and 310 and the printers 150 and 160), and suited to the protocol, such as the SNMP, IPP, or SOAP, contains position information of the printer, and user PC network address information for controlling the printer. Therefore, the server PC 100 can specify printer position information by a response from each printer. In addition, the network address of each user PC (300 or 310) managing each printer can be specified by a response from the user PC.

[0034]

In step S404, whether printers exist in the geographical range designated in step S401 is determined on the basis of the position information acquired in step S403. If corresponding printers exist in the range designated by the server manager (YES in

S404), a printer driver is distributed to and installed in each of user PCs (300 and 310) managing these printers, or an installed printer manager is updated (S405). If there is no corresponding printer within  
5 the designated range (NO in S404), the processing is terminated without any update process.

[0035]

Figs. 6A and 6B are views for conceptually explaining a target region which is set from the  
10 designated geographical range and the printer search result, and in which a printer driver is automatically updated. Referring to Figs. 6A and 6B, A to D indicate regions corresponding to the geographical range. Fig. 6A(a) shows the geographical range designated in  
15 step S401. Referring to Fig. 6A(a), a hatched portion (the regions A and B) is the designated geographical range. Fig. 6A(b) shows the position of a printer found in steps S402 and S403. Referring to Fig. 6A(b), a printer exists only in the region A.

20 [0036]

A "region A" in which the regions A and B whose geographical ranges are designated and the region A in which the found printer exists overlap each other is a target region in which a printer driver is to be  
25 automatically updated. In this case, in step S405, a printer driver installation execute file is executed as the automatic printer driver update process.

Consequently, a printer driver is installed or updated in a user PC which controls the printer within the range designated in step S401. This printer driver installation or update is explained by the conventional  
5 technique called push type printer driver installation, so a detailed explanation thereof will be omitted.

[0037]

Fig. 6B(a) shows the geographical range designated in step S401. Referring to Fig. 6B(a), a  
10 hatched portion (the region A) is the designated geographical range. Fig. 6B(b) shows the positions of printers found in steps S402 and S403. Referring to Fig. 6B(b), printers exist only in the regions B, C, and D. Since the region A designated as the  
15 geographical range does not overlap the regions B, C, and D in which the found printers exist, no automatic printer driver update is executed in accordance with the step (NO in S404) in Fig. 4, and the processing is terminated.

20 [0038]

Fig. 7 is a view showing a memory map when the printer driver program is loaded into the RAM 2 on each of the user PCs 300 and 310 and made executable in this embodiment. This memory map contains various  
25 application programs 201 executed on the user PC 300, a free memory area 202, related data 203, printing related programs 204, an OS 205, and a basic I/O system

(BIOS) 206 for controlling various devices, e.g., the printer 150, connected to the user PC 300. The printer driver program to be installed is stored in the memory as part of the printing related programs 204.

5 [0039]

In this embodiment as described above, when a printer driver for controlling a printer is to be installed or updated, each of a large number of existing client computers need not be recognized. That is, only by designating the geographical range of printers as objects of installation or update, it is possible to search for printers within this range, and collectively install or update printer drivers in clients which manage these printers. This processing reduces the load required to individually install or update the printer drivers.

[0040]

Fig. 8 is a view showing a modification of the installation process shown in Fig. 4.

20 Portions largely different from the processing shown in Fig. 4 will be explained below with reference to Fig. 8. In S801, the network range of printer drivers as objects of printer driver update is designated. In response to this search designation in S801, a search request is transmitted to the user PC 300.

25 [0041]

In S8001, the user PC 300 receives and recognizes

the search request transmitted from the server PC 100.  
In S8002, the user PC 300 returns a search response to  
the search request.

[0042]

5           Returning to the processing on the server PC 100,  
in S802, the server PC 100 sequentially receives and  
stores search requests from responding printers.

[0043]

          In step S803, on the basis of the printer search  
10   process in step S802, the server PC 100 acquires  
position information of each printer. As a method of  
acquiring position information, for example, position  
information can be collected from each network device  
by the MIB which can be managed by the SNMP. A  
15   communication protocol between the server PC 100 and a  
network device is not limited to the SNMP. For  
example, position information can also be acquired by  
an IPP (Internet Printing Protocol) or a SOAP (Simple  
Object Access Protocol).

20   [0044]

          In step S804, whether printers exist in the range  
designated in step S801 is determined. If  
corresponding printers exist in the range designated by  
the server manager (YES in S804), a printer driver is  
25   distributed to and installed in a driver accepting  
module activated in each of user PCs (300 and 310)  
managing these printers (S805). A printer driver

already installed in the user PC 300 is updated (this process will be described in detail later). If it is determined in step S804 that there is no corresponding printer within the designated range (NO in S804), the  
5 processing is terminated without any update process.  
[0045]

In step S806, the server PC 100 waits for reception of an installation completion notification from the user PC 300. That is, the server PC 100  
10 determines in S806 whether installation completion notifications are received from all the PCs found in S802, or whether a predetermined time has elapsed. If installation completion notifications are received from all the user PCs or if the predetermined time has  
15 elapsed, the server PC 100 determines that the installation process is normally completed, and terminates the process. If installation completion notifications are not received from all the user PCs and if the predetermined time has not elapsed, the flow  
20 returns to S805 to continue the process.  
[0046]

The processing on the user PC 300 will be explained below. In S8001, the user PC 300 receives and recognizes the search request transmitted from the  
25 server PC 100. In S8002, the user PC 300 responds to the search request received in S8001. In S8003, by synchronizing with the response to the search request

in S8002, the user PC 300 loads the driver accepting module as a resident program, and prepares for driver reception. In S8004, the user PC 300 uses the driver accepting module to receive the driver transmitted in  
5 S805 by the server PC. In S8005, the user PC 300 installs the driver received in S8004. When this driver installation process is completed, the flow advances to S8006 to unload the driver accepting module. In S8007, if all the received drivers are  
10 completely installed or updated, the user PC 300 transmits an installation completion notification to the server PC, and terminates the processing.  
[0047]

It is of course also possible to perform S8003 in  
15 response to the recognition process in S8001. More preferably, in S8003, a preparation completion notification indicating that the accepting module for receiving a control program to be activated in the user PC as a driver transfer destination is prepared is  
20 transferred to the server PC. At the beginning of S8005, the preparation completion notification transmitted in S8003 is recognized. In S805, the driver distribution process is performed in response to the reception and recognition of the preparation  
25 completion notification.

[0048]

<Other Embodiment>



Although a printer driver is an object in the above embodiment, the present invention can also be practiced for various device drivers, e.g., drivers of a display, scanner, digital camera, facsimile  
5 apparatus, mouse, loudspeaker, and sound source device.  
[0049]

Further, the object of the present invention can also be achieved by supplying a storage medium storing the program code of software for implementing the  
10 functions of the above embodiment to a system or apparatus, and reading out and executing the program code stored in the storage medium by a computer (or a CPU or MPU) of the system or apparatus. In this case, the program code read out from the storage medium  
15 implements the functions of the above embodiment, and the storage medium storing this program code constitutes the invention.  
[0050]

As this storage medium for supplying the program  
20 code, it is possible to use, e.g., a floppy (registered trademark) disk, hard disk, optical disk, magnetooptical disk, CD-ROM, CD-R, magnetic tape, nonvolatile memory card, and ROM.  
[0051]

25 Also, besides the functions of the above embodiment is implemented by executing the readout program code by the computer, the present invention

includes a case where an OS (Operating System) or the like running on the computer performs part or the whole of actual processing in accordance with designations by the program code and thereby implements the functions  
5 of the embodiment.

[0052]

Furthermore, the present invention also includes a case where the program code read out from the storage medium is written in a memory of a function expansion  
10 board inserted into the computer or of a function expansion unit connected to the computer, and, in accordance with instructions by the program code, a CPU or the like of the function expansion board or function expansion unit performs part or the whole of actual  
15 processing and thereby implements the functions of the above embodiment.

[0053]

<Modes>

Modes according to the present invention will be  
20 enumerated below.

[0054]

[Mode 1] An information processing method of distributing across a network a control program for controlling a network device is characterized by  
25 comprising:

a designation step of designating a geographical range for searching for a network device connected to

the network;

a search step of searching for the network device; and

a distribution step of collectively distributing  
5 a control program to a client which manages the network device searched for within the designated geographical range.

[0055]

[Mode 2] The information processing method  
10 according to mode 1 is characterized in that the geographical range designated to search for the network device contains a room, floor, or building of a structure in which the network device is installed, or a municipality, a prefecture, or a nation in which the  
15 network device is installed.

[0056]

[Mode 3] The information processing method according to mode 1 is characterized by further comprising a recognition step of recognizing a  
20 preparation completion notification indicating that an accepting module which receives the control program activated in an external information processing apparatus as a transfer destination of the control program is prepared,

25 wherein the distribution step distributes the control program in response to recognition of the preparation completion notification by the recognizing

means.

[0057]

[Mode 4] The information processing method according to mode 1 is characterized in that the  
5 network device comprises setting means for setting position information corresponding to the geographical range.

[0058]

[Mode 5] The information processing method  
10 according to mode 4 is characterized in that the setting means sets the position information corresponding to the geographical range on the basis of information obtained by using a GPS.

[0059]

15 [Mode 6] An information processing apparatus for distributing across a network a control program for controlling a network device is characterized by comprising:

designating means for designating a geographical  
20 range for searching for a network device connected to the network;

searching means for searching for the network device; and

distributing means for collectively distributing  
25 a control program to a client which manages the network device searched for within the designated geographical range.

[0060]

[Mode 7] A program for allowing a computer to execute information processing for distributing across a network a control program for controlling a network  
5 device is characterized by comprising:

a designation module for designating a geographical range for searching for a network device connected to the network;

a search module for searching for the network  
10 device; and

a distribution module for collectively distributing a control program to a client which manages the network device searched for within the designated geographical range.

15 [0061]

[Mode 8] A computer-readable storage medium is characterized by storing a program defined in mode 7.

[0062]

#### [Effect of the Invention]

20 As has been described above, according to the present invention, when control programs of network devices are to be installed, each of a number of existing client computers need not be recognized, and it is only necessary to designate a geographical range  
25 where network devices as objects exist. In this manner, the network devices within the range are searched, and printer drivers are allowed to be

collectively installed or updated in clients which manage the network devices. This processing reduces the load required to individually install or update the printer drivers.

5 [Brief Description of the Drawings]

[Fig. 1]

Fig. 1 is a block diagram for explaining the configuration of a system according to an embodiment of the present invention.

10 [Fig. 2]

Fig. 2 is a view for explaining an outline of the internal arrangements of a user PC and printer by taking the connection of a user PC 300 and printer 150 as an example.

15 [Fig. 3]

Fig. 3 is a view for explaining the arrangement of a server PC 100 shown in Fig. 1.

[Fig. 4]

Fig. 4 is a flow chart for explaining the process of installing or updating a printer driver according to the embodiment of the present invention.

[Fig. 5]

Fig. 5 is a view showing the module configuration of network management software.

25 [Fig. 6A]

Fig. 6A shows views for conceptually explaining a target region set from a designated geographical range

and a printer search result to automatically update printer drivers.

[Fig. 6B]

Fig. 6B shows views for conceptually explaining a  
 5 target region set from a designated geographical range  
 and a printer search result to automatically update  
 printer drivers.

[Fig. 7]

Fig. 7 is a view showing a memory map when a printer  
 10 driver program is loaded in a RAM 2 on the user PC 300  
 and made executable in the embodiment.

[Fig. 8]

Fig. 8 is a flow chart showing a modification of the  
 installation process shown in Fig. 4.

15 [Description of the Reference Numerals]

1	CPU
2	RAM
3	ROM
4	system bus
20 5	keyboard I/F
6	display I/F
7	external memory I/F
8	printer I/F
9	keyboard
25 10	display
11	external memory (HD, FD)
12	CPU

	13	RAM
	14	ROM
	15	system bus
	16	input unit
5	17	printing unit I/F
	18	external memory I/F
	19	printing unit
	20	operation panel
	21	external memory (HD, FD)
10	22	position search unit
	100	server PC
	150	printer
	200	network
	300	user PC

15

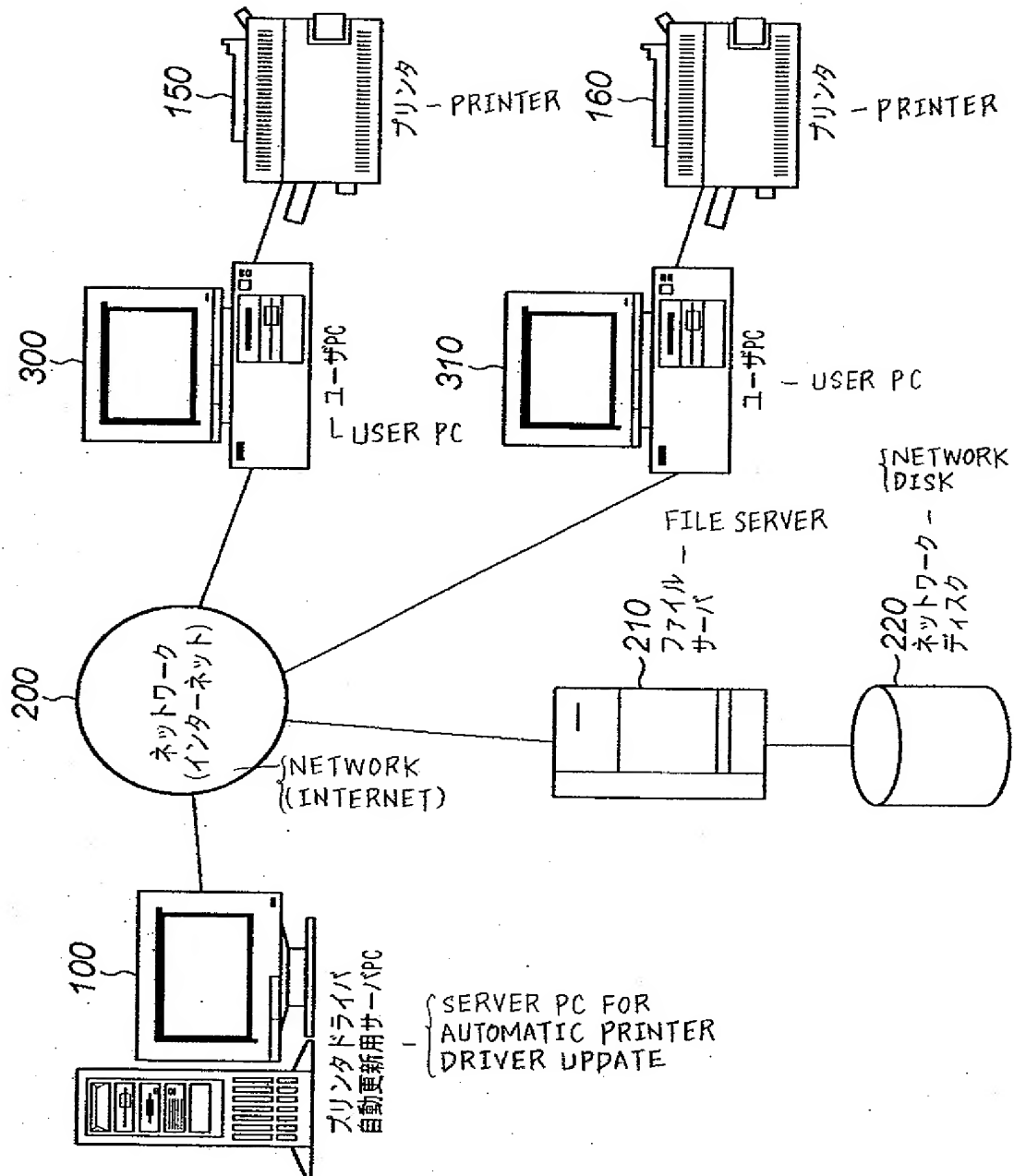


【書類名】 図面 - DRAWINGS

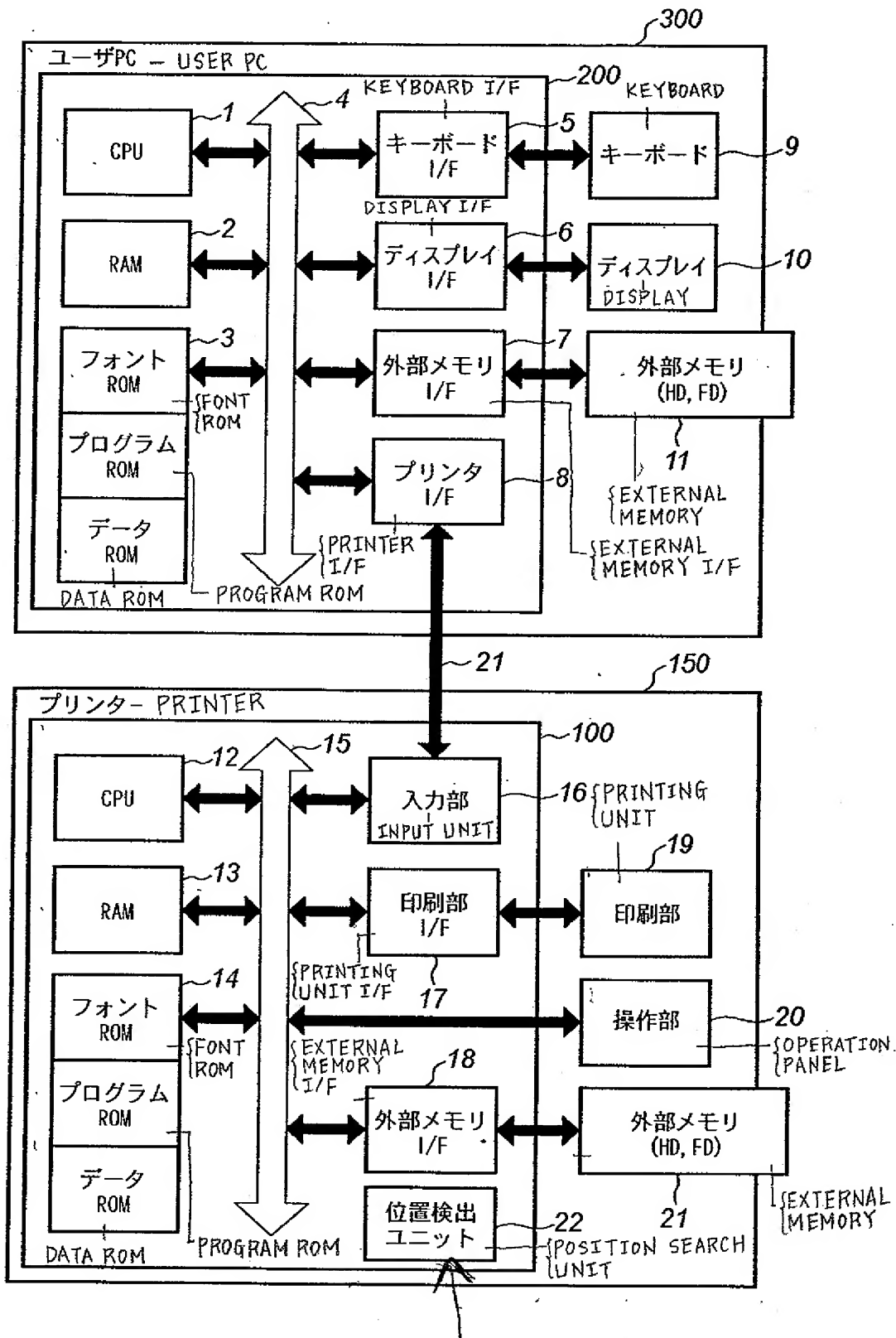
L TYPE OF DOCUMENT

【図 1】

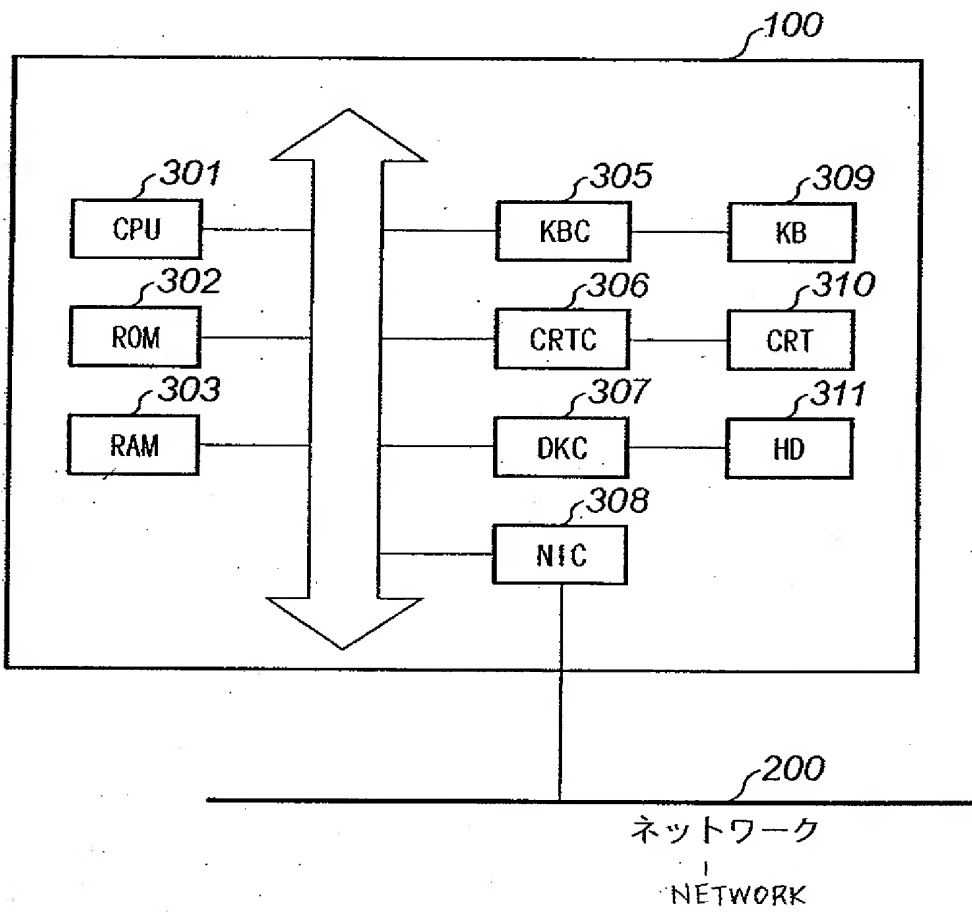
L FIG. 1



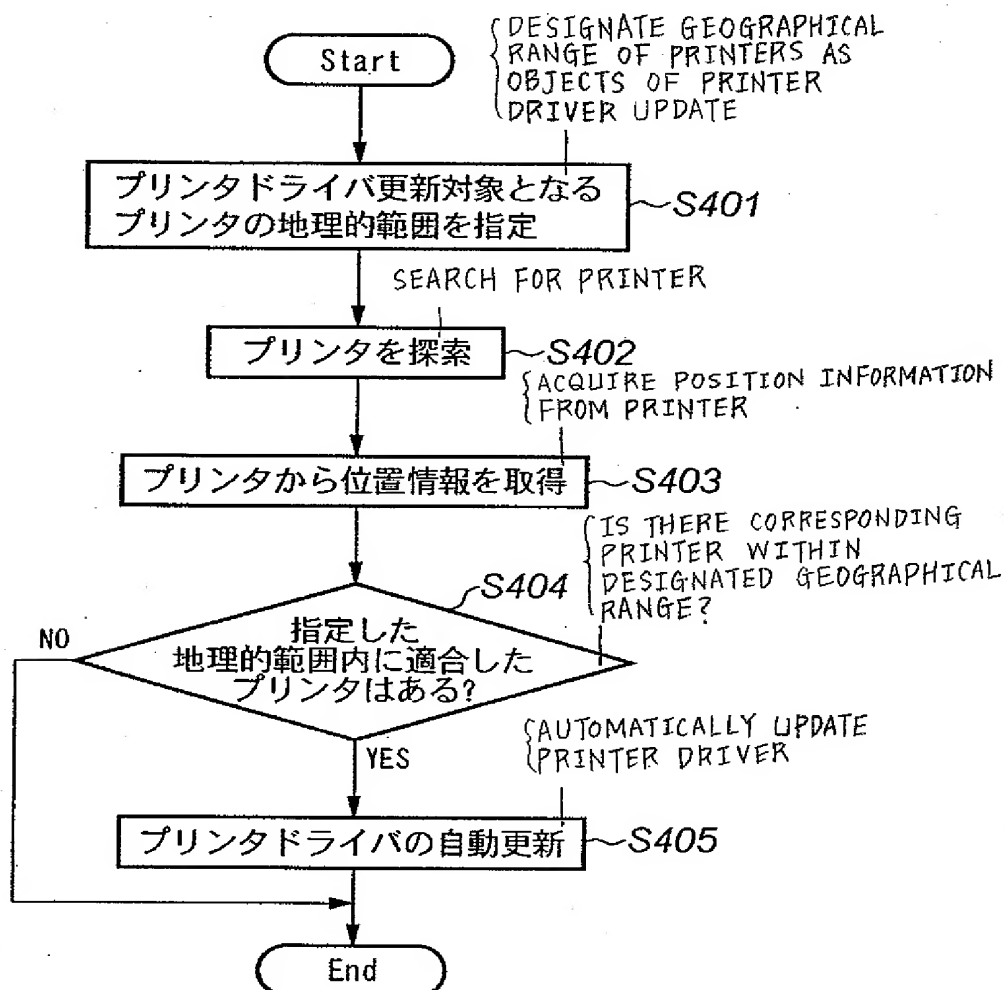
【図2】-FIG. 2



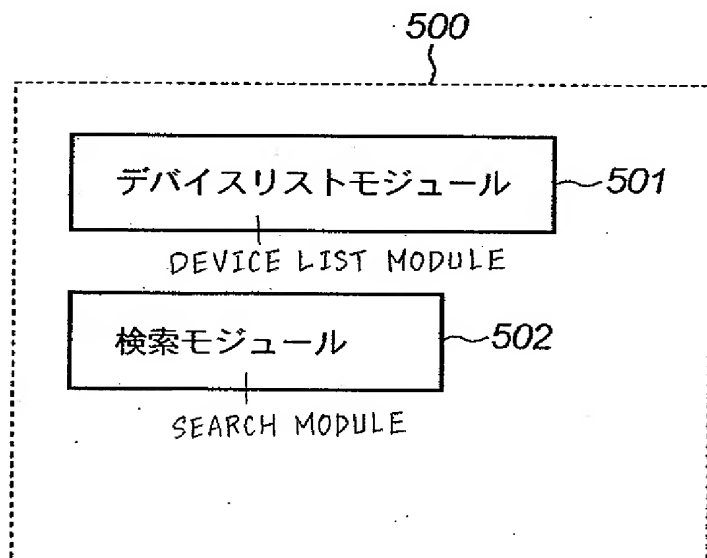
【図3】 - FIG. 3



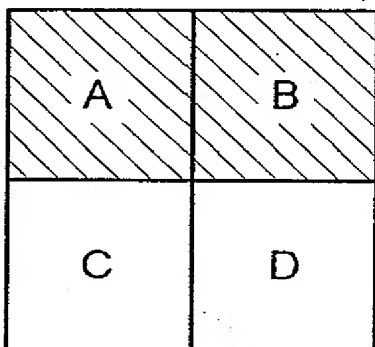
【図4】- FIG. 4



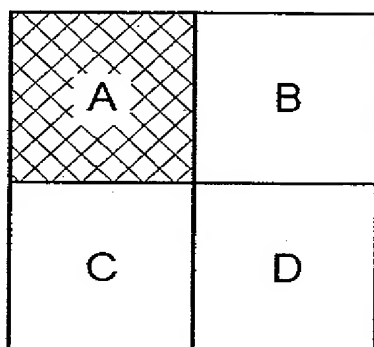
⑤  
【図5】- FIG. 5



【図6A】— FIG. 6A

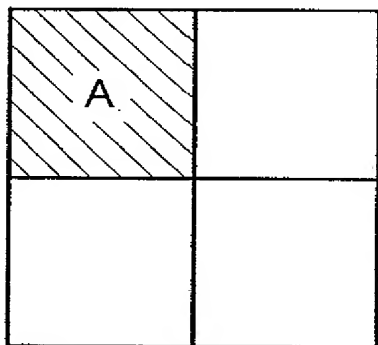


(a)

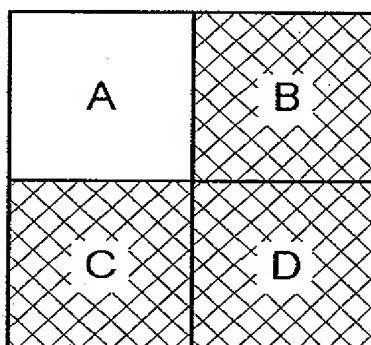


(b)

【図6B】— FIG. 6B

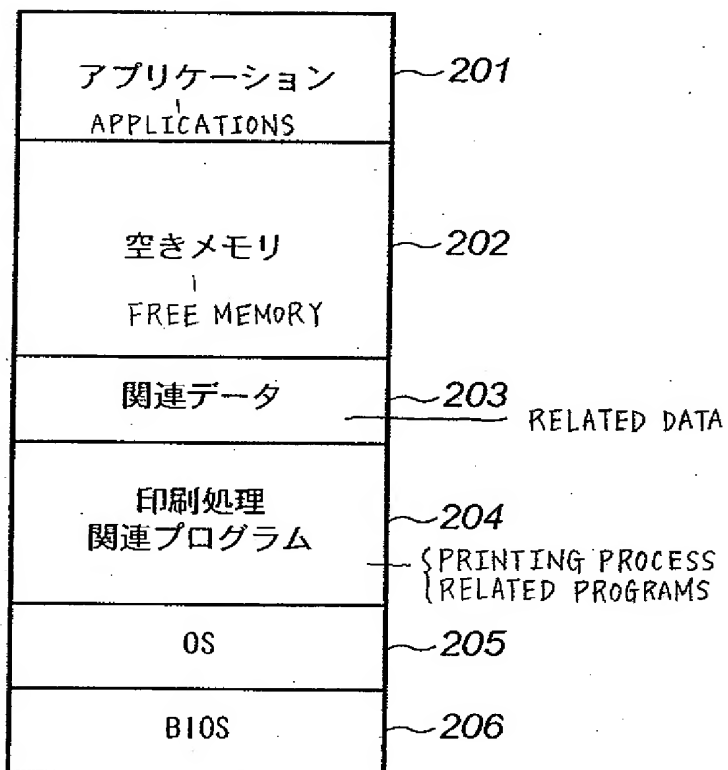


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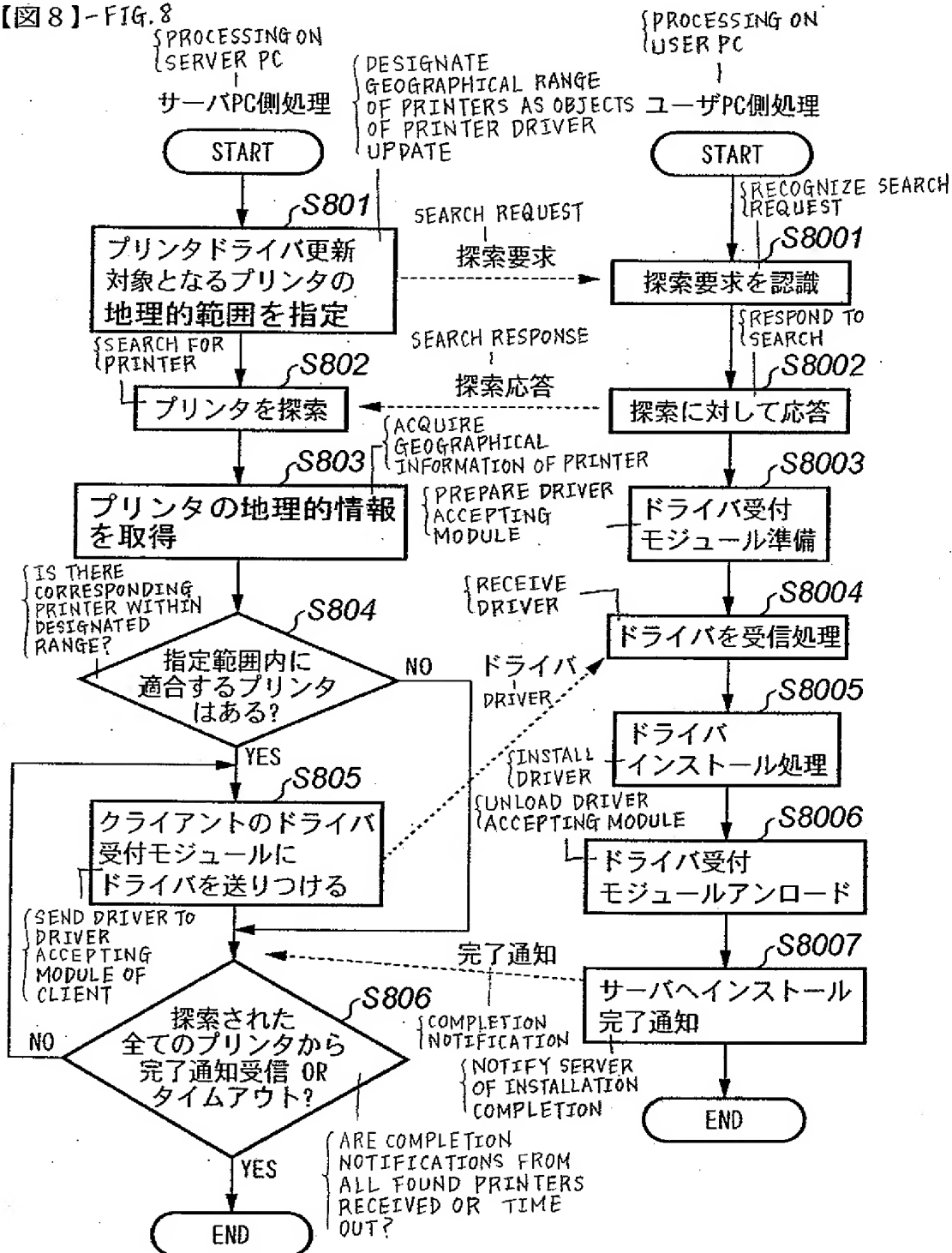


(b)

【図7】 - FIG. 7



【図8】-FIG.8



[Type of the Document] Abstract

[Abstract]

[Problem] This invention makes it possible to collectively install control programs in clients as  
5 objects within the designated geographical range.

[Solving Means] The geographical range for searching for network devices connected to a network is designated (S401). Then, the network devices are searched for (S402). Control programs are collectively  
10 distributed to clients which manage the network devices searched for within the designated range (Yes in S404) and S405).

[Selected Drawing] Fig. 4